



# NDFD Verification

## Meteorological Development Laboratory

January 21, 2004

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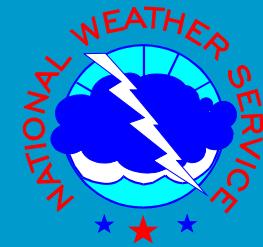
# Output Format



- **MAPS**
  - One score and forecast projection
- **PLOTS**
  - One score, multiple projections
- **TABLES / TEXT**
  - ASCII and downloadable files



# Point Verification



- ~1279 CONUS MOS sites
- NDFD forecast from nearest gridpoint
- Compare to GFS-based MOS
- Compute monthly statistics

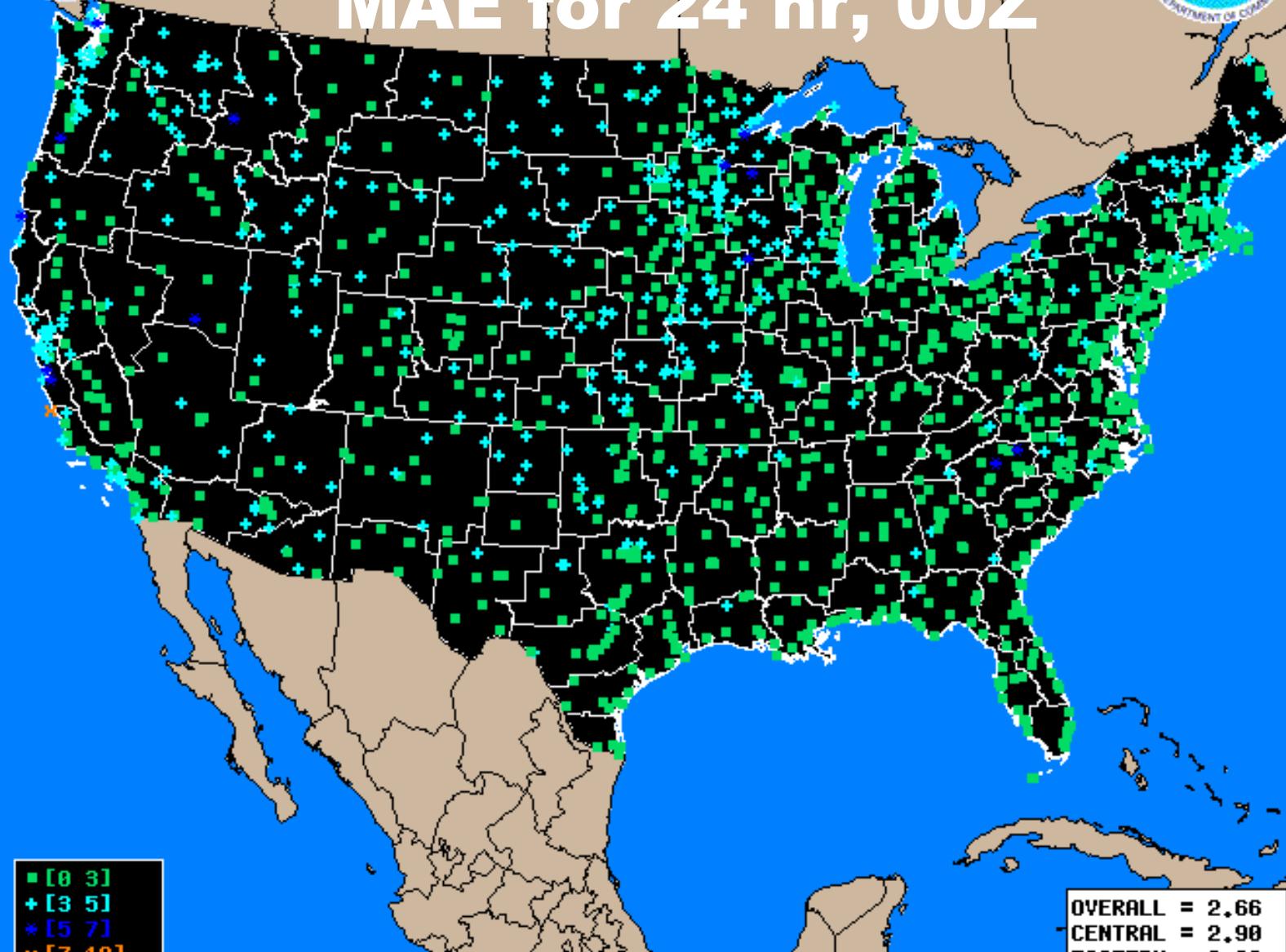


# **NDFD Verification**

## **Point Verification Maps**



# Maximum Temperature MAE for 24 hr, 00Z



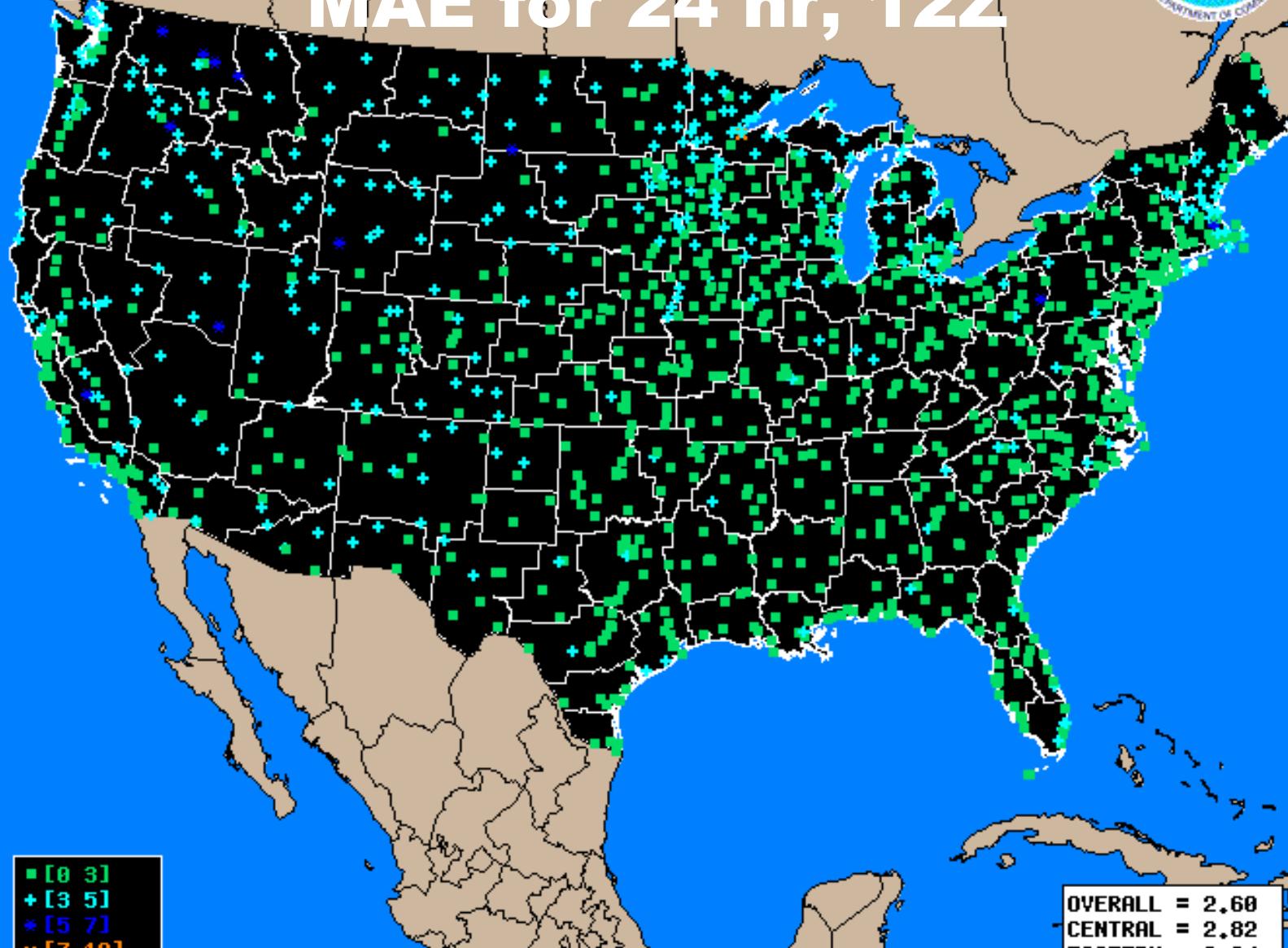
Max Temp, MAE (F), NDFD vs Pnt Obs, 24(00Z)

Forecasts from Aug. 1, 2003 to Aug. 31, 2003

OVERALL = 2.66
CENTRAL = 2.98
EASTERN = 2.39
SOUTHERN = 2.15
WESTERN = 3.18



# Minimum Temperature MAE for 24 hr, 12Z



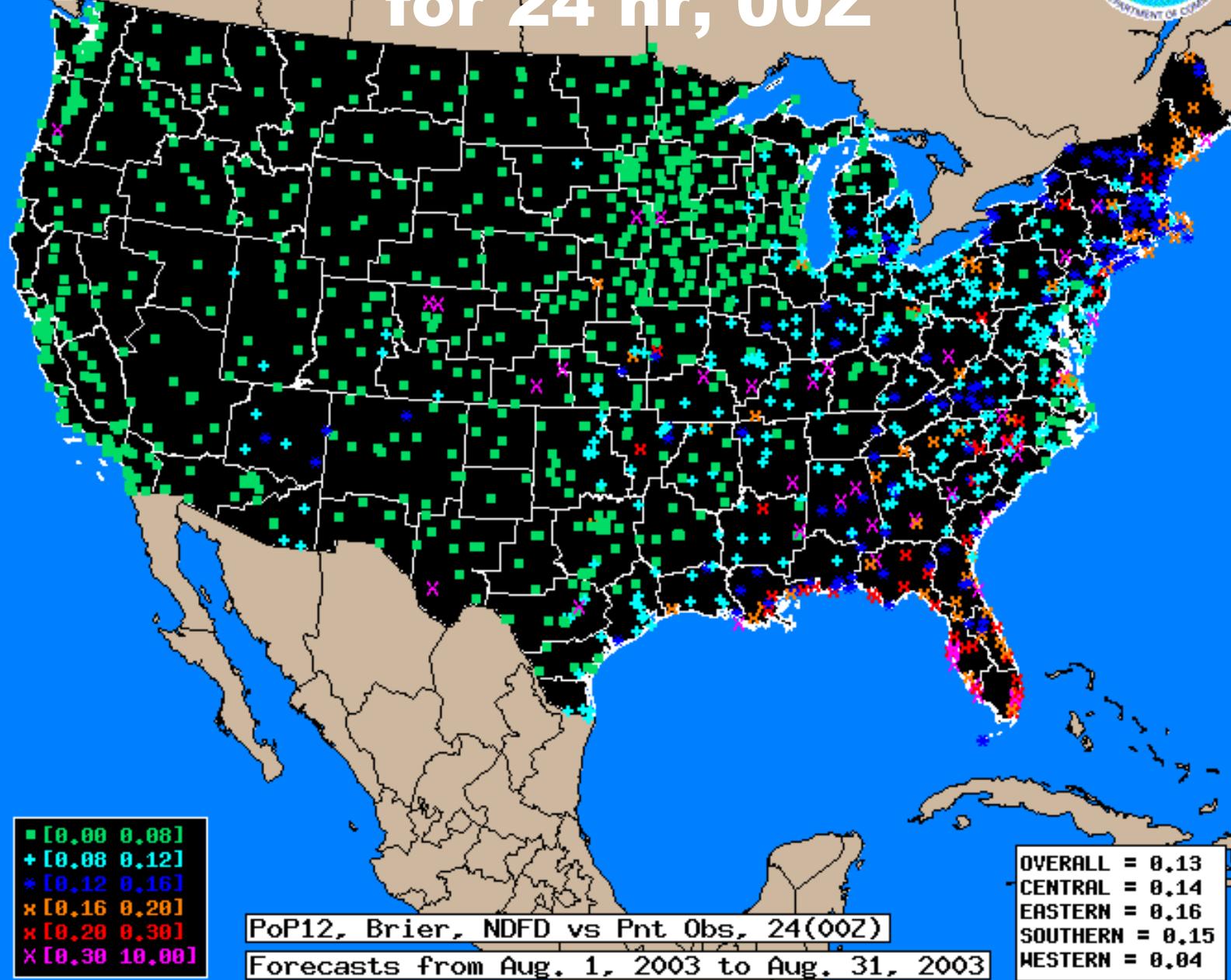
Min Temp, MAE (F), NDFD vs Pnt Obs, 24(12Z)

Forecasts from Aug. 1, 2003 to Aug. 31, 2003

OVERALL = 2.68
CENTRAL = 2.82
EASTERN = 2.34
SOUTHERN = 2.05
WESTERN = 3.14

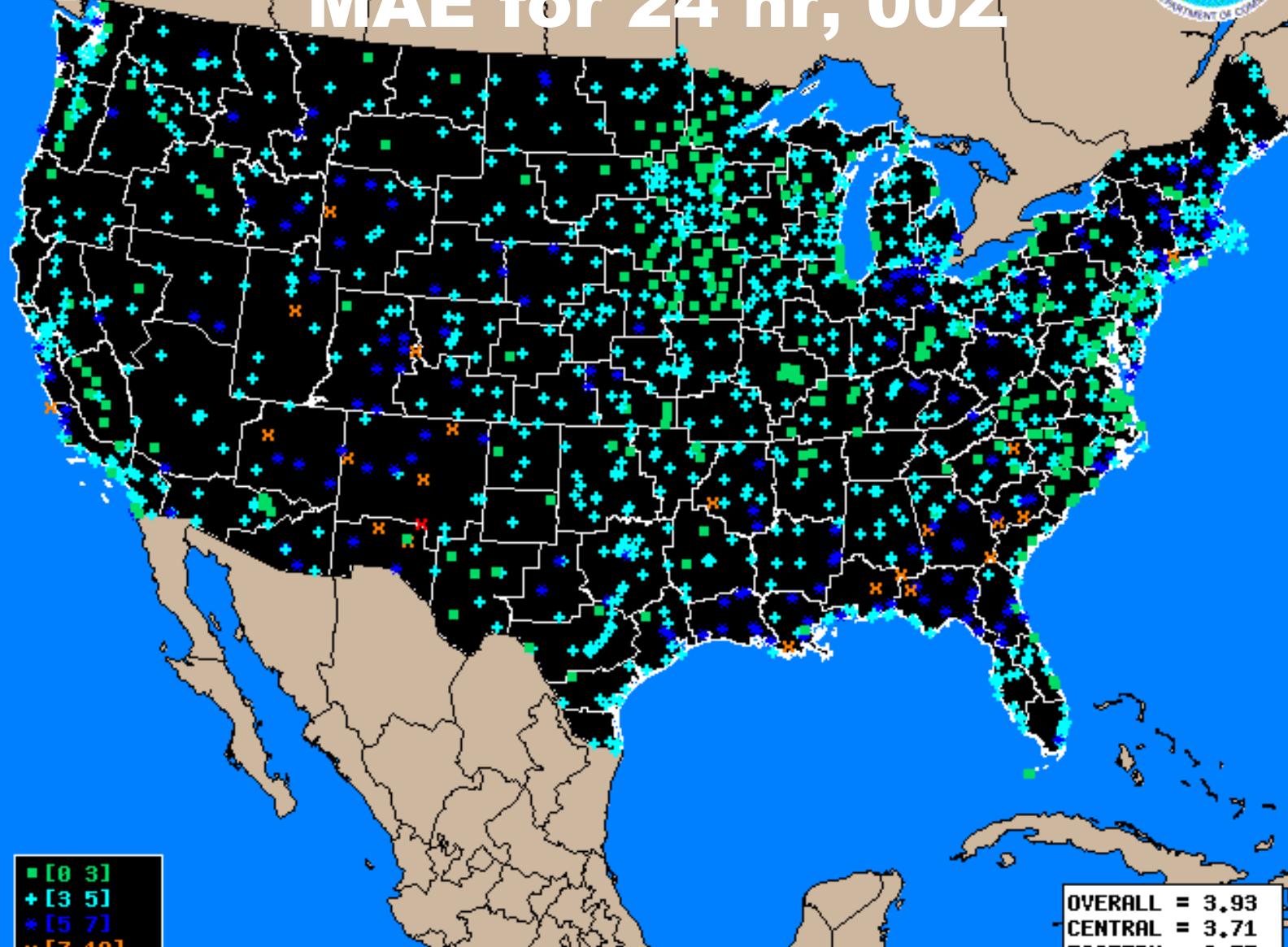


# POP Brier Score for 24 hr, 00Z





# 3-hourly Temperature MAE for 24 hr, 00Z



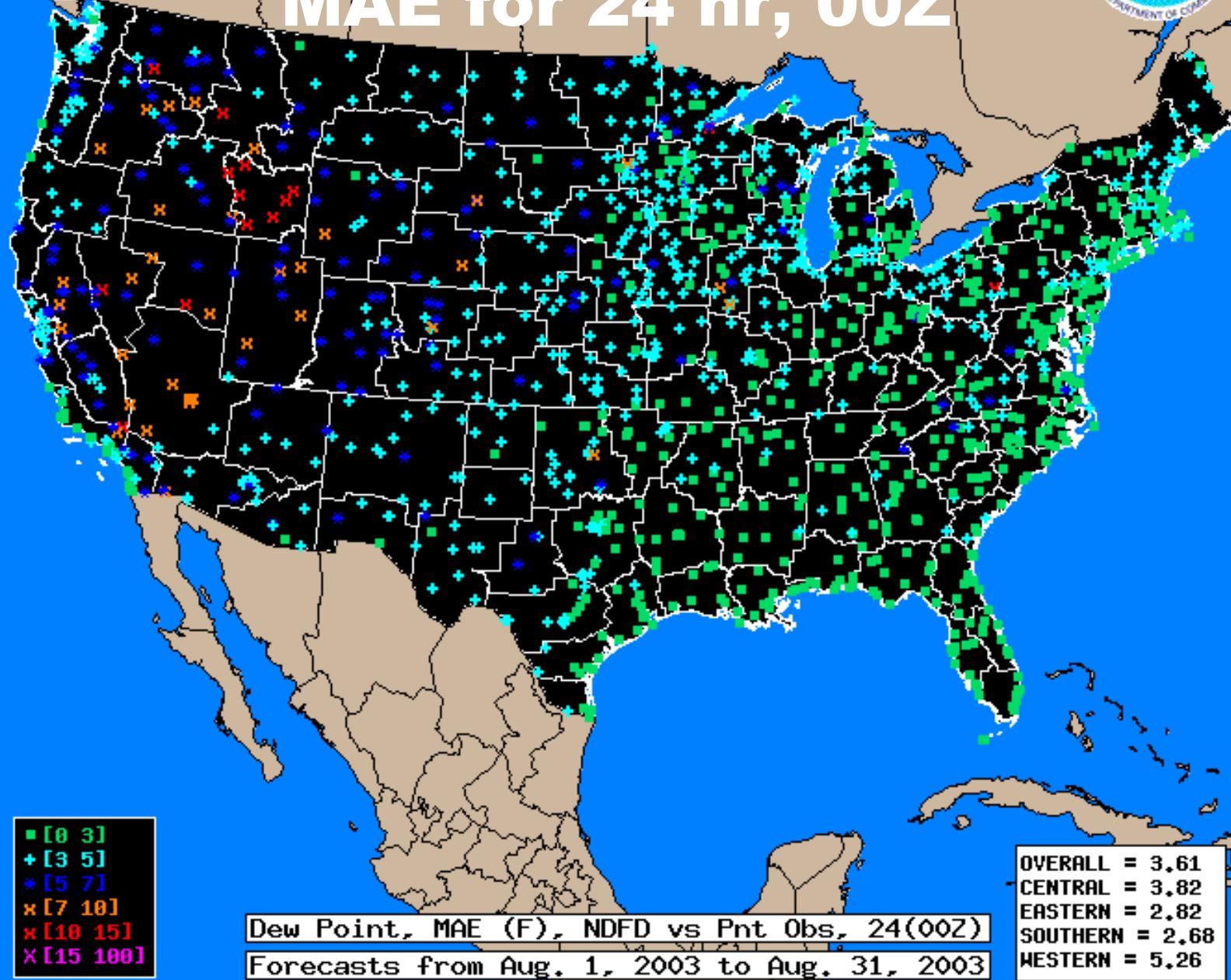
Temperature, MAE (F), NDFD vs Pnt Obs, 24(00Z)

Forecasts from Aug. 1, 2003 to Aug. 31, 2003

OVERALL = 3.93
CENTRAL = 3.71
EASTERN = 3.77
SOUTHERN = 4.35
WESTERN = 4.81

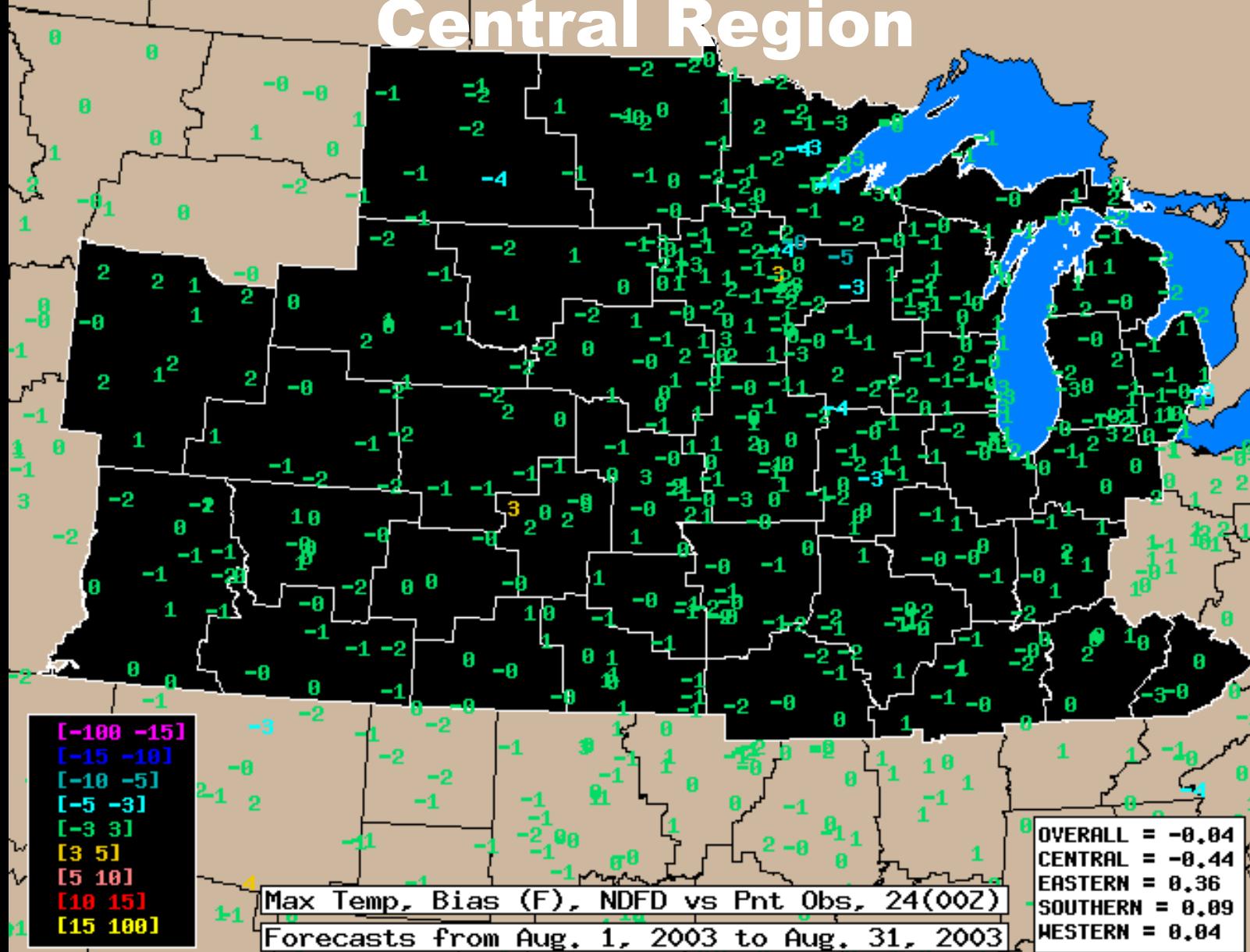


# 3-hourly Dewpoint Temp MAE for 24 hr, 00Z





# Maximum Temperature Bias for 24 hr, 00Z Central Region

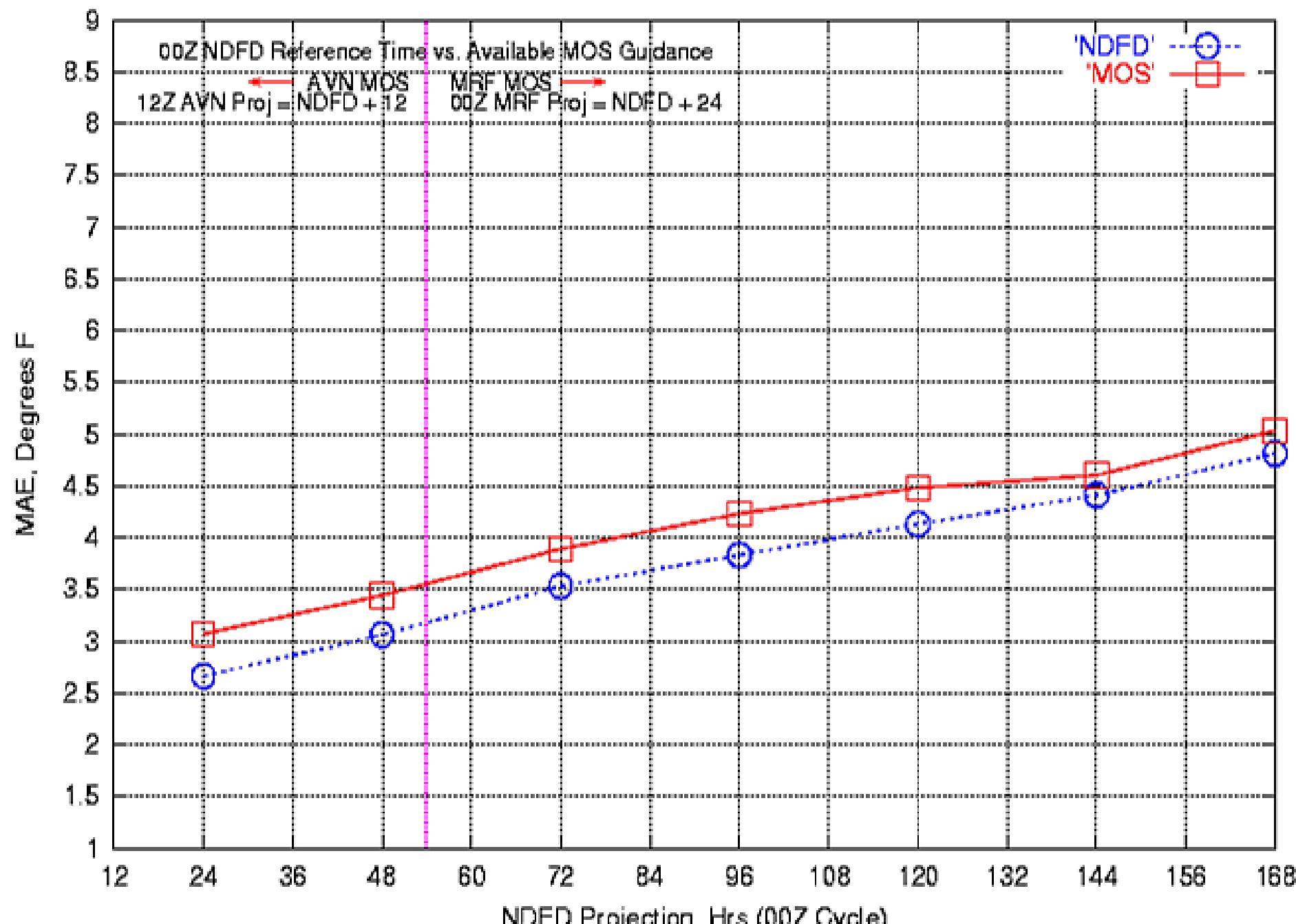




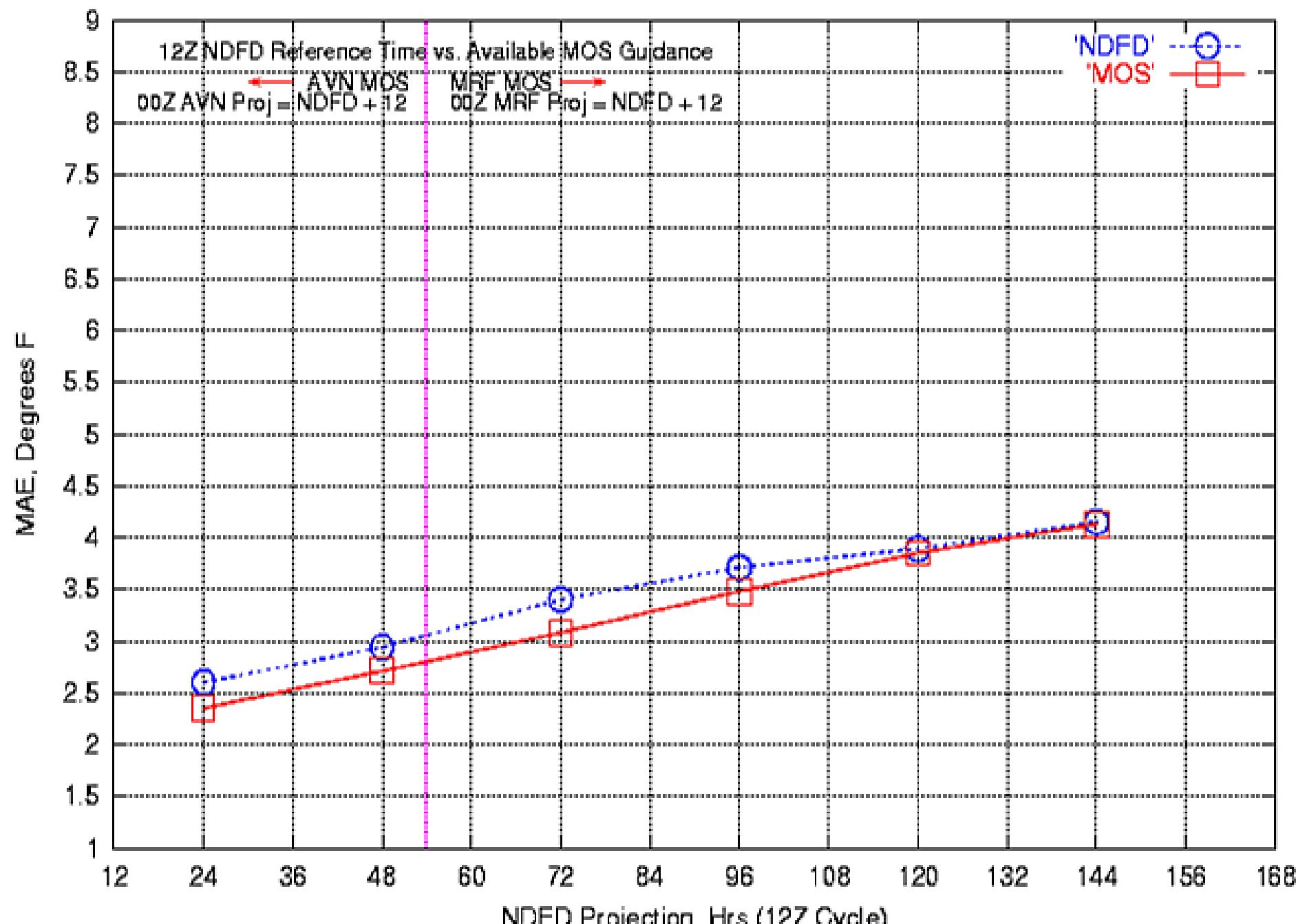
# NDFD Verification

**Statistics vs. Fcst Projection  
(Plots)**

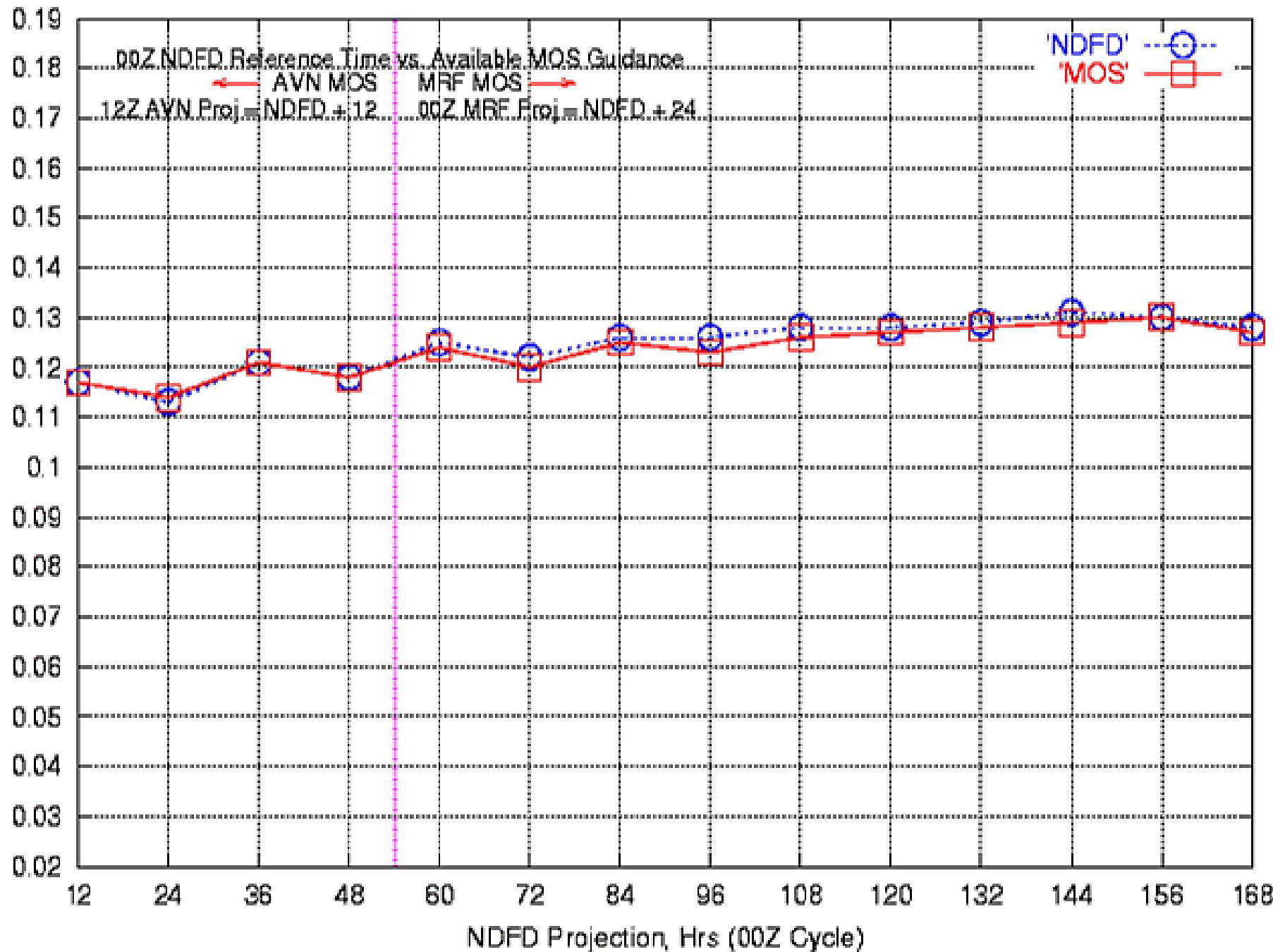
# Tmax MAE, 00Z NDFD vs. MOS, 1279 Sites, ALL Regions, August, 2003



# Tmin MAE, 12Z NDFD vs. MOS, 1279 Sites, ALL Regions, August, 2003



# PoPs, 00Z NDFD vs. MOS, 1279 Sites, ALL Regions, August, 2003

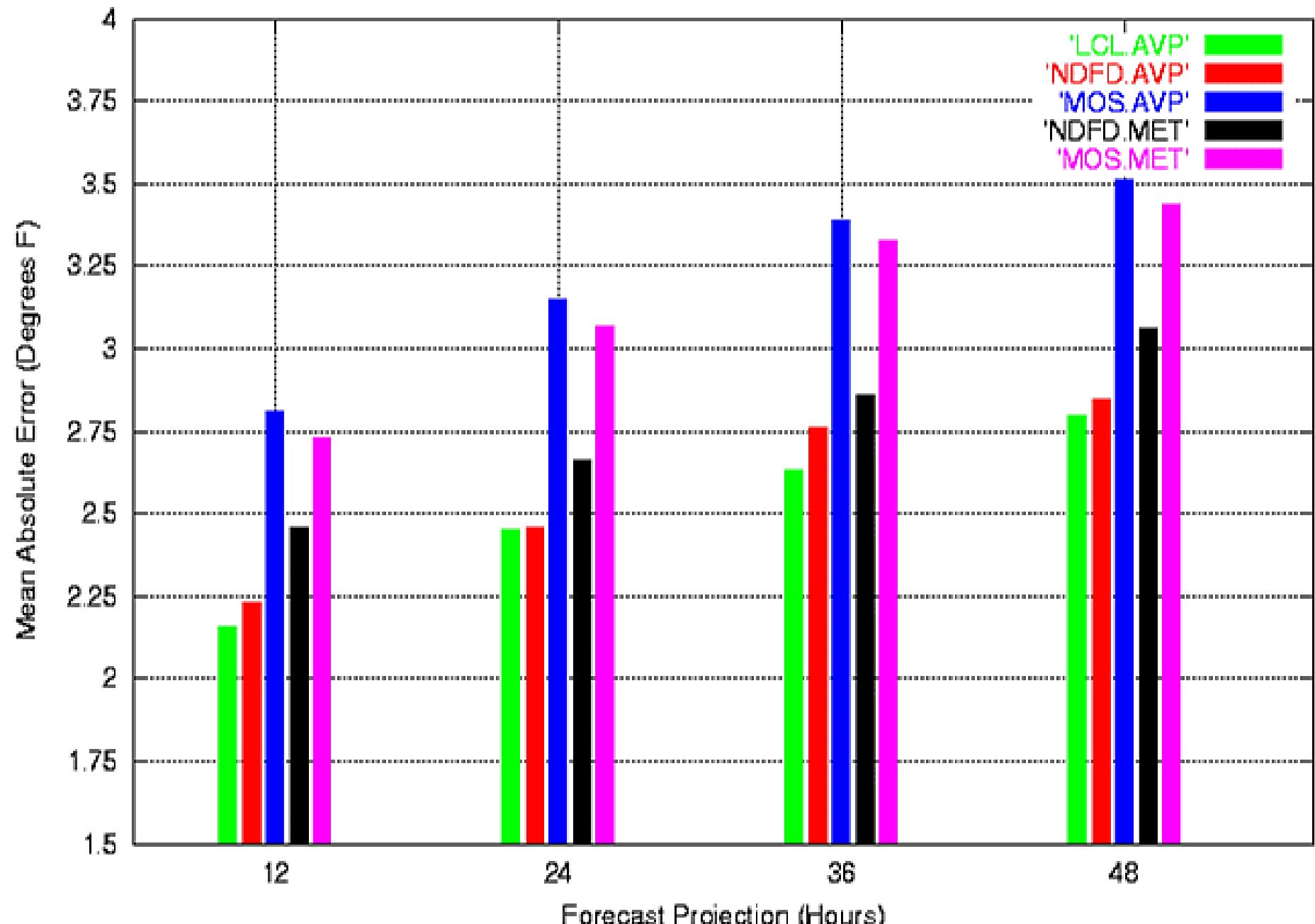




# NDFD Verification

**Comparisons with old AVP  
Verification Scores**

Maximum Temperature Forecast, MAE, ALL Regions  
AVP = 208 AVP Sites, MET = 1279 METAR Sites, August, 2003





# NDFD Verification

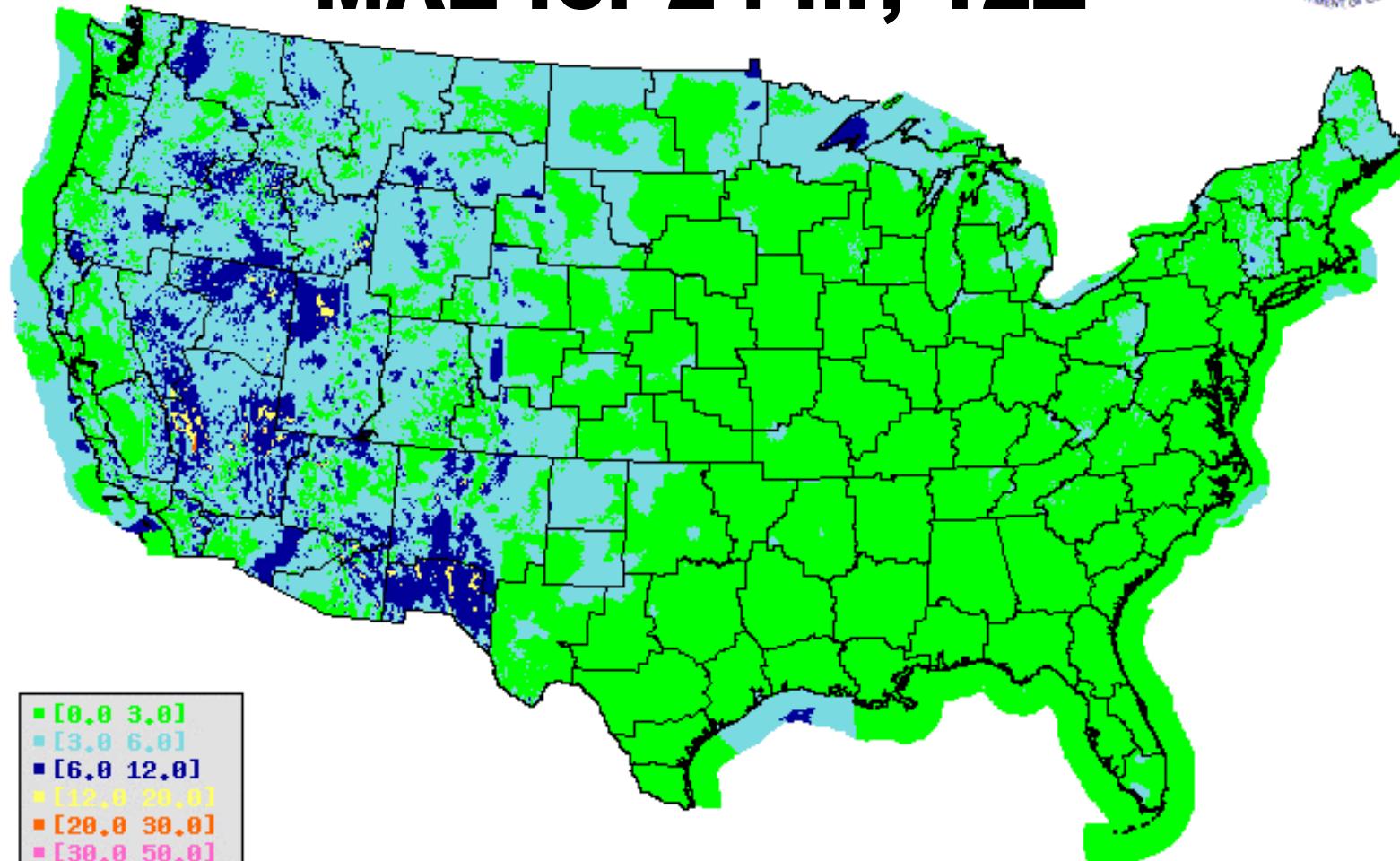
Gridded Verification

vs.

RUC Analysis



# Maximum Temperature MAE for 24 hr, 12Z

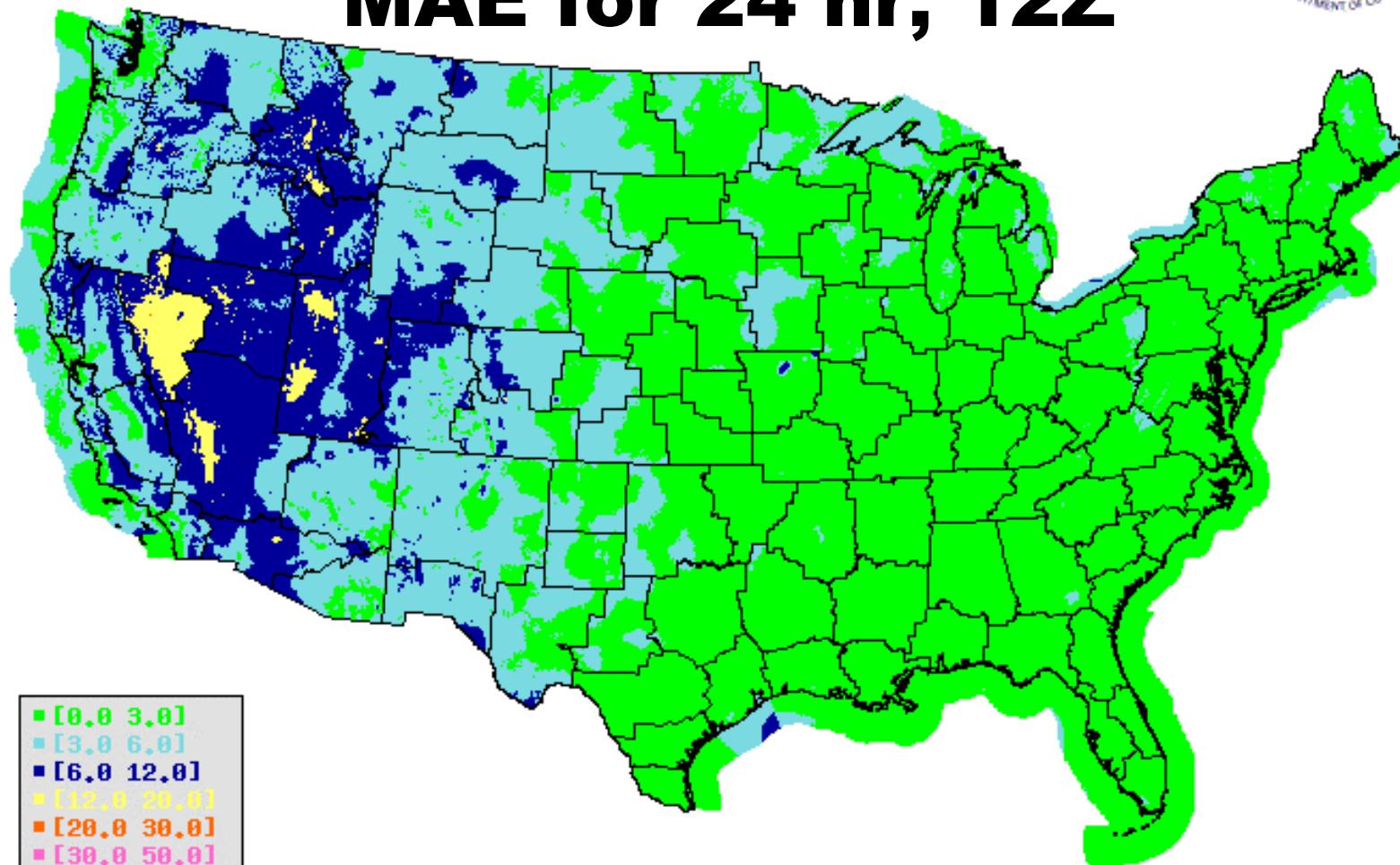


MAE, Surface Temperature vs RUC Analysis, 12Z 024 hr

Forecast Period: 8/1/03 – 8/31/03



# Dewpoint Temperature MAE for 24 hr, 12Z

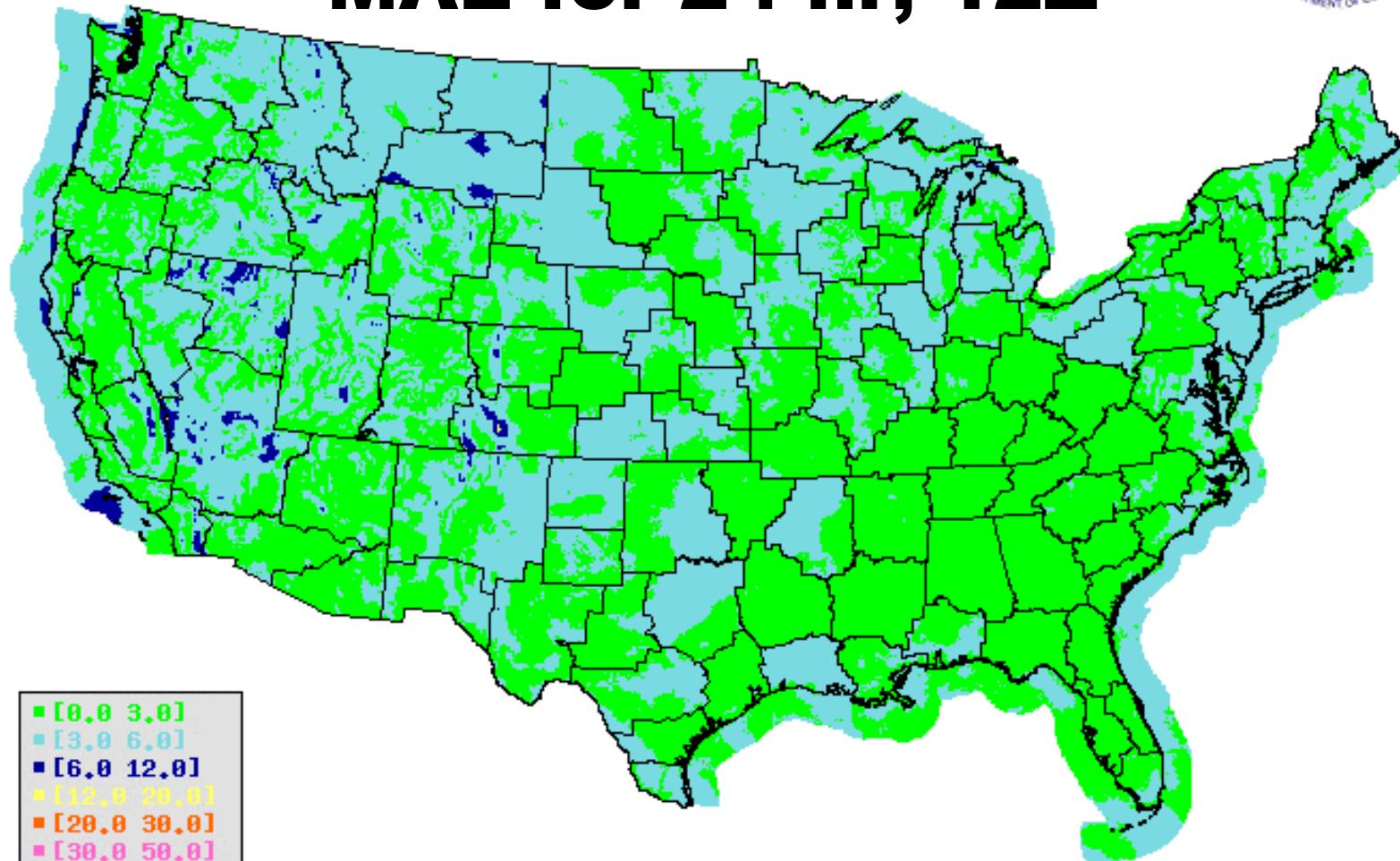


MAE, Dew Point vs RUC Analysis, 12Z 024 hr

Forecast Period: 8/1/03 – 8/31/03



# Wind Speed MAE for 24 hr, 12Z



MAE, Wind Speed vs RUC Analysis, 12 Z 024 hr

Forecast Period: 8/1/03 – 8/31/03



# **NDFD Verification**

**Text version of Point  
Verification**



1200 UTC NDFD REFERENCE TIME 012-h PROJECTED MAX MEAN

STATION	NUMCASES	NDF_MAE	MDS_MAE
OVERALL	32283.00000	2.46000	2.73000
CENTRAL	11267.00000	2.60000	3.37000
EASTERN	7432.00000	2.28000	2.16000
SOUTHERN	7421.00000	2.04000	2.34000
WESTERN	6163.00000	2.92000	2.71000
K2WX	28.00000	3.36000	6.25000
K4BL	.00000	9999.00000	9999.00000
K8DB	25.00000	2.08000	3.24000
K9V9	28.00000	3.00000	5.32000
KAQO	27.00000	2.93000	3.56000
KABR	28.00000	2.79000	2.96000
KACB	26.00000	2.46000	1.77000
KADG	27.00000	2.22000	2.22000
KADU	28.00000	2.36000	3.54000
KAEL	27.00000	2.44000	3.93000
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# NDFD Verification

Each month MDL generates:

- 4910 maps
- 115 statistics vs projection plots
- 537 (31 mb) text files
- 150 plots for gridded verification
- TOTAL ~ 200 mb of verification / month  
AND GROWING



# NDFD Verification

## What's next?



- Point verification – add verifying observations from mesoscale networks (MesoWest, etc.)
- Additional variables and statistics – sky cover, wind dir, etc. Heidke score
- Gridded verification – evaluate Western Region's ADAS analysis as the verifying analysis



# NDFD Verification

## What's next?



- Alaska ORD – leading into monthly statistics for that region
- Allow user-selection of periods and sites
- Public web site
- How do we condense these statistics?



# NDFD Verification References:



<http://slosh.nws.noaa.gov>

click on the 1<sup>st</sup> item for NDFD verification

Dagostaro, V. J., W. A. Shaffer, M. J. Schenk, J. L. Gorline, A. A. Taylor, 2004: A prototype verification system for examining NDFD forecasts. *Preprints 20<sup>th</sup> Conf. on Weather Analysis and Forecasting/16<sup>th</sup> Conf. on Numerical Weather Prediction*, Seattle, WA, Amer. Meteor. Soc., CD-ROM, 6.1.